PRODUCT STEWARDSHIP INSTITUTE

Sustainable Solutions to Protect Our Environment

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PRODUCT STEWARDSHIP PROJECT SUMMARY

FIXED NUCLEAR GAUGES AND TRITIUM EXIT SIGNS February 19, 2003

Background: Radioactive materials are present in numerous types of specialized equipment, particularly those used in the medical, commercial, and industrial sectors. Industrial devices containing radioactive materials include nuclear fixed gauges that are used to measure and monitor thickness, density, level, and other process parameters. Devices used for commercial applications include exit signs that are internally illuminated by sealed tritium gas light sources. These products represent minimal risk to public health during use since the radioactive materials are encased to prevent the escape of radiation. In many cases, manufacturers must obtain specific licenses to produce and sell this equipment, and purchasers must be licensed to use it. Regulations also require equipment purchasers to safely dispose of the radioactive sources.

Proposed Problem Statement: Products containing radioactive material become radioactive sources of concern as they become unwanted, abandoned, lost, stolen, or improperly disposed. The high cost of proper disposal and regulatory obstacles are contributing factors to these end-of-life management problems, along with people not understanding the danger of the product. If damaged or disassembled, these radioactive sources can potentially contaminate the environment, pose risks to human health, and require contamination cleanup costs. Radioactive materials can also contaminate recyclable materials and facilities when buildings with devices containing radioactive sealed sources are demolished. This can result in radiation exposure risks for recycling facility employees and the general public, as well as significant decontamination costs. As attention has focused on protecting against terrorist activity, additional concern has arisen due to the premise that these radioactive sources could conceivably be used to make "dirty bombs." While many devices require radioactive elements to function , non-radioactive product alternatives do exist for some devices. However, many of these new products have not been fully validated and, therefore, are not widely accepted by those who would use them.

The Project: PSI has been hired by the U.S. Environmental Protection Agency's Office of Radiation and Indoor Air to bring key participants together to take a product stewardship

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approach to jointly solve management problems related to nuclear fixed gauges and tritium exit signs. Participants will include representatives from federal and state government, product manufacturers, product distributors, scrap metal recyclers, waste management companies, the demolition industry, and others. During this prototype project, PSI hopes to achieve an agreement among the key participants that includes steps each party can take to achieve the goals outlined in advance by the participants. PSI plans to meet these goals through a process that combines applied research with personal outreach and discussion to develop solutions that will include both front-end solutions (e.g., the use of alternative non-radioactive technologies) and those at a product's "end of life" (e.g., proper collection/recycling/disposal). PSI will remain flexible in its approach to change elements of the project to achieve results agreed to as important by project stakeholders.

PROPOSED PROJECT GOALS

1. To engage key stakeholders involved in the manufacture, sale, use, and disposal of fixed nuclear gauges and tritium exit signs to find solutions that would result in the following:
    - Increased identification and collection of equipment at end-of-life.
    - Decreased number of unwanted, abandoned, lost, stolen, or improperly disposed radioactive sources.
    - Reduced risk of contamination at recycling facilities, landfills, incinerators, or other end-of-life locations.
    - Increased reuse or recycling of radioactive materials and other equipment components.
    - Increased purchase of alternative products that do not use radioactive materials, or devices containing radioactive materials that have been redesigned to reduce potential human and environmental impacts.
    - Promote research and development of alternative devices in various applications and enhance existing alternative devices.
2. To provide a framework for future efforts to successfully manage other devices containing radioactive materials.
3. To develop a sustainable financing mechanism for the management of past and future used products that creates an incentive for program participation.
4. To reach the above goals through measurable results.

POSSIBLE ISSUES TO DISCUSS (examples)

- Roles of each major stakeholder group.
- Goals for equipment collection, reuse, recycling, and proper disposal.
- Opportunities for manufacturers to take back used devices containing radioactive materials if there are affordable and legal disposal options available.
- Goals for the reduction of unwanted, abandoned, lost, stolen, or improperly disposed radioactive sources.
- Opportunities for improvements in current fragmented regulatory approach through petitions or other vehicles.
- Protocols and registries that enables the identification and removal of radioactive products prior to building demolition.

- Identify more robust and long-term identification/labeling solutions for devices containing radioactive materials.
- Reduction goals for the amount of radioactivity in new equipment.
- Educational information and programs needed to identify and collect used equipment.
- Government procurement guidelines for the purchase of fixed gauges and exit signs that do not contain radioactive materials.
- A sustainable financing mechanism to provide ongoing funding to reach the project goals.
- Timetable for implementation.

PROJECT EVALUATION (PROPOSED METRICS OF SUCCESS)

The success of the three-year project will be evaluated both on the short-term goal of conducting a national multi-stakeholder dialogue that results in an agreement that addresses health and environmental risks associated with radioactive sources and on the long-term goal of effective implementation of that agreement.

Product Stewardship Dialogue Evaluation Metrics

- Development of a *Product Stewardship Action Plan* that provides stakeholders with a clear understanding of issues involving unwanted, abandoned, lost, stolen, or improperly disposed radioactive sources (nuclear fixed gauges and tritium exit signs) and provides a roadmap for addressing those issues in a national dialogue.
- Active participation of key stakeholder groups in a national product stewardship dialogue, as measured by the number of participants and the range of interests represented.
- An agreement between key stakeholders that outlines the roles of each stakeholder group in addressing radioactive sources. This prototype agreement will hopefully address financing mechanisms, collection and recycling/reuse infrastructure, education, and other issues agreed to voluntarily by the full stakeholder group.

Product Stewardship Agreement Evaluation Metrics

- Development and promotion of alternative, non-radioactive technologies as measured by the number of options available on state and federal contracts, dollars spent on procurement of alternative products, and similar verifiable measures.
- Increase in the number of fixed nuclear gauges and tritium exit signs collected, the increased amount of radioactive and other materials collected from those products, and increased amount of material reused or recycled from the amount collected.
- Increase in awareness that the workers in the demolition, metals recycling, and other industries have regarding the safety/environmental issues relating to radioactive sources, as measured by an informal survey of a specific group of people (to be determined).

ACTION PLAN FOR ACHIEVING PROJECT GOALS

PSI proposes that the project goals be reached through the following four-phase process:

Phase I: Research and Outreach
Phase II: Convene National Dialogue
Phase III: Implement Program
Phase IV: Monitor Program

Phase I (Research and Outreach)

Phase I is the research and outreach phase. PSI will identify and contact representatives from federal and state government, product manufacturers, product distributors, scrap metal recyclers, waste management companies, the demolition industry, and others. PSI will interview the stakeholders in order to introduce them to the project, obtain information for the technical research report, and determine their interest in participating in a national product stewardship dialogue. The interview process also provides an opportunity for the stakeholders to communicate their interests and perspectives regarding the nature of the radioactive materials management problem and any potential solutions.

PSI will conduct research on the management of radioactive materials and prepare a background report that will cover topics such as quantifying the extent of the problem (e.g., number of devices used, radioactive materials used per unit of product, current and potential future management costs, etc.), existing collection programs, and regulatory issues. PSI will also prepare a Radioactive Materials Product Stewardship Action Plan that will be used to guide the dialogue in Phase II. This plan will include a proposed problem statement, proposed dialogue goals, key issues for discussion, and possible solutions that each of the stakeholders wants considered in Phase II of the project.

Phase II (Dialogue)

In Phase II, PSI will conduct any additional research needed for the national dialogue, and convene a consensus-based dialogue with representatives from the key stakeholder groups identified in Phase I. The proposed goals of the dialogue will be determined in Phase I through extensive interviews with potential participants. Upon convening in Phase II, the group will review the goals and adjust them as necessary. PSI will schedule group conference calls prior to the meetings to prepare the participants so that the meeting time is used efficiently, and will create working groups, as needed, to focus on issues identified by the group. PSI will also develop contact lists, a listserv, and a web site for effective and efficient communication. The project timeline and process will be determined in interviews with participants in Phase I but reviewed and revised based on the group input in Phase II. At the end of this phase, PSI will provide a report that details the agreement and summarizes the dialogue. If any components of the agreement can be implemented immediately, PSI will assist in doing so.

Phase III (Implementation)

Phase III is the implementation phase. PSI will work with the stakeholders to implement components of the agreement reached in Phase II. PSI will hold conference calls and meetings

with the stakeholder groups to coordinate efforts and maintain momentum in the implementation of solutions.

Phase IV (Monitoring)

In Phase IV, PSI will develop a report that evaluates the agreement and its implementation, using the metrics of success established in the Phase II dialogue. Throughout the project, PSI will gather data to enable this subsequent project evaluation.

Other PSI Product Stewardship Projects

PSI is currently involved in developing product stewardship solutions on the following products: electronics, paint, propane tanks, and radioactive materials. This year, PSI expects to also be involved in developing product stewardship solutions for pesticides and products containing mercury.

Organization History and Mission

PSI History: On December 6-7, 2000, the Product Stewardship Institute coordinated the nation's first forum for government officials to discuss product stewardship policies and programs. Over 100 government officials attended the two-day national Product Stewardship Forum, representing 19 states, 7 regions of the U.S. Environmental Protection Agency, and a dozen local governments. At the forum, Secretary Bob Durand of the Massachusetts Executive Office of Environmental Affairs (EOEA) announced the creation of the Product Stewardship Institute. The Institute is the first major initiative to grow out of an agreement signed in January 2000 by Secretary Durand and University of Massachusetts President William Bulger. PSI was created to provide a focal point for communication with product manufacturers and other key participants rather than risk the random development of agency programs and regulations across the country.

Mission Statement: *The Product Stewardship Institute assists state and local government agencies in establishing cooperative agreements with industry and developing other initiatives that reduce the health and environmental impacts from consumer products. The Institute seeks out the active input from, and cooperates with, environmental groups, business interests, academic institutions, the federal government, and related organizations to achieve product stewardship goals.*

PSI Governance Structure: The following are members of PSI's new Steering Council as of July 1, 2002. The Council assists the Director in making decisions for the Institute and guides its development.

Ken Geiser	University of Massachusetts
Gina McCarthy	MA Executive Office of Environmental Affairs
Jay Shepard	WA Department of Ecology

Jan Whitworth	OR Department of Environmental Quality
John Balkenbush	MO Department of Natural Resources
Gretchan Ammerman	HI Department of Health
Shirley Willd-Wagner	CA Integrated Waste Management Board
Scott Klag	Metro Regional Government, OR
Chris Luboff	Seattle Public Utilities, WA

PROJECT TIMELINE